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STATE GOVERNMENT SURVEY COMMITTEE

TASK FORCE REPORT

"INSTITUTIONAL FARM MANAGEMENT"

THE PENNSYLVANIA STATE COLLEGE

School of Agriculture

State College, Pennsylvania

Department of
Agricultural Economics and Rural Sociology

December 3, 1952

Mr. John M. O'Neil
State Government Survey Committee
455 Education Building - P. O. Box 231
Harrisburg, Pennsylvania

Dear Mr. O'Neil:

Attached are two copies of the final report of our survey of institutional farms. On pages 14,15, and 16 are two additional sections on Purchasing Policies and on Farm Records which were not in the rough draft.

The section on Efficiency of Operations starting on Page 4 and ending on Page 9 which was only outlined in our rough draft does not, I'm afraid, indicate the amount of work Mr. Clyde Markeson and our Statistical Laboratory put in on this part of the report. It does point up, however, the important variations in efficiency among the different institutional farms. It was also our work on this section which prompted what we believe are some quite important comments and suggestions in the section on Farm Records and in point IV of the Conclusions.

We have enjoyed working on this survey and hope the report will prove useful. Our work was facilitated greatly by the excellent cooperation we obtained from Mr. V. A. Houston throughout the study as well as the assistance given by the superintendents and farm managers at each of the institutions we visited.

Sincerely yours,

L. F. Miller
Professor
Farm Management

LFM:pj
Enc. 2

NUMBER OF INSTITUTIONAL FARMS

Number of Farms

Farming operations are carried on at 21 normal and 6 penal institutions in the Commonwealth of Pennsylvania. These farms comprise a total of 24,898 acres of which 19,868 are tillable. The gross value of the agricultural production on these farms was $4,979,000 in the fiscal year ending May 31, 1938. This is equivalent to the gross value of around 140 commercial Pennsylvania farms. The principal purposes of these land holdings are to provide occupation for a large number of patients and inmates, a constant source of good quality food, and a degree of insulation for the community and the institution.

Plans are made each fall for the crop and livestock program for the following year in accordance with the wise use of resources and the food needs of the institution. These plans are developed through annual planning conferences held at each institution with representatives from the state Department of Welfare from Harrisburg and all members of the institutional staff who are concerned with food production and its utilization. In vegetables are of primary importance in fulfilling dietary needs and since vegetable production provides occupation for a large number of patients and inmates, trucks producing is given priority in land use. Crops to support the livestock program are given preference in the use of land not required for vegetables and potatoes.

As dairy cattle are among the most profitable livestock enterprises, they are given priority over beef cattle unless there is a surplus of roughage or pasture to permit keeping more beef. As with truck gardening, these enterprises provide occupation for many inmates and patients and provide milk and meat for the institutional population.

Table 1 - Average Size and Organization of Institutional Farms, June 1, 1951 - May 31, 1952.

Size and Organization Factors	Average per Farm*
Gross value of product	$169,594
Number of acres in farm	1,354
Number of tillable acres	514
Number of milk cows	76
Number of litters	51
Number of layers	1,059
Per cent receipts from	
Dairy	36.4
Farm**	30.7
Truck Garden	13.6
Piggery	13.8
Hennery	5.5

*Average based upon number of farms having specified enterprises this period: Gross value, number of acres in farm, and tillable acres 27, milk cows 25, litters of pigs 26, and laying hens 21.

**Farm principally includes income from orchards, potatoes, and beef not incidental to dairy. To avoid double accounting, does not include farm crops fed to livestock.

The average farm in the fiscal year ending May 31, 1952 had 1,354 acres with 514 tillable acres, 76 milk cows, 51 litters of pigs, 1,059 layers, and produced agricultural commodities having a gross value of almost $170,000 (Table 1).

On the average dairying is the major source of income comprising 36 percent of the gross receipts. This is followed by the farm enterprises which contributed 31 percent and the truck garden and piggery enterprises each constituting 14 percent. These proportions of the total income from various sources on a group of large farms were found to be quite comparable with those on a group of small farms.

Table 1 – Average Size and Composition of Traditional Towns, June 1, 1775 – Dec 31, 1800

Size and Composition	Number
Towns with Population	[illegible]
Number of Acres in Town	[illegible]
Number of Village Acres	[illegible]
Number of Hill Acres	[illegible]
Number of Fishers	[illegible]
Number of Laymen	[illegible]
Per-cent Completely Free	[illegible]
Black	[illegible]
Negro	[illegible]
Town Laymen	[illegible]
Clergy	[illegible]
Deacons	[illegible]

Towns principally Inhabited by Fishers Town Population and Composition

Towns principally Inhabited by Laymen Town Population and Composition

Towns principally Inhabited by Clergy, Town Population and Composition

Method of Survey

The purpose of this survey was to make an over-all evaluation of the efficiency of farming operations at state owned institutions. This was accomplished by personally visiting about one-third of the institutional farms, talking with the superintendents and farm managers, and observing the farm management practices being followed in the various crop and livestock enterprises. In addition to the information obtained in this manner from the selected institutions, a considerable amount of statistical data relating to various aspects of the operations on all the farms were obtained from the Department of Welfare. This information included both income and expense figures for several years, as well as some physical production data for the various enterprises. On the basis of this data it was possible to make some analysis of the efficiency of farming operations on all institutional farms along the lines of the traditional analysis used in analyzing regular commercial farms.

The limitations of this survey, however, should be kept clearly in mind in considering the following analysis and conclusions. It would require much more time than was available for a farm management specialist to analyze present operations on each farm and to recommend specific changes in management and operations. All that can be accomplished in a half-day visit on farms as large as these is to appraise the over-all level of efficiency in the various enterprises and to determine the nature of some of the major problems facing the farm operations. It was not possible to make specific recommendations for changes or to calculate the probable dollar and cents benefit from changes in production practices, use of labor, or the investment in machinery and buildings.

The value of the statistical analysis, based primarily on data already available in Harrisburg, is limited by the differences in certain accounting and operational procedures on institutional farms as compared with private farms. For example, there is no charge for buildings, insurance or taxes, or for interest on investment on institutional farms. Also the part of the labor supplied by patients is free. On the other hand, farm equipment and labor is frequently used in keeping up the institution grounds, trash disposal, institutional hauling, and the like, which is hard to credit to the farm.

Efficiency of Operations

In the following section a comparison has been made among institutional farms with respect to certain factors which research has shown to be associated with efficiency of operations on private farms. These factors may be grouped under (1) rates of production, (2) feeding results and (3) expense and cost data. Generally, the data are based on an average of the results for several years to avoid some of the year to year variation in these factors due to differences in weather, or other factors beyond the operator's control. This does not eliminate the variations between farms due to differences in the inherent productivity of the soil, size of business, or type of institution which are of considerable importance.

A careful analysis of differences between penal and mental institutions was not possible because of limited numbers, but this is probably not a major factor except in the case of labor costs, where the penal institution have an advantage. It is believed, therefore, that to a considerable extent the variations noted, especially in livestock production, are due to differences in management.

Where possible, a comparison has been made between the results obtained on institutional and on commercial farms. In many cases this comparison could not be made because data are not available or because the data cannot be made comparable.

Rates of Production

The level of crop yields obtained on institutional farms may be readily compared with yields on commercial farms by use of the crop index, which expresses the yields obtained from these farms as a percentage of the average yields obtained by farmers in the county over the past ten years. The crop index for the 27 institutional farms was well above the ten-year county average of 100 (Table 2). An index of 148 for the lowest group of nine farms means that the average crop yield was 48 percent above the county average but the average yield for the nine farms in the top group was 124 percent above the average.

Table 2 - Comparison of Rates of Production Among Institutional Farms (3 Year Average: June 1, 1949 - May 31, 1952).

Measures*	Division of Farms into Groups		
	High One Third	Middle One Third	Low One Third
Crop Index	224	176	148
Pounds of Milk Produced per Cow	13,444	11,378	9,980
Pigs Slaughtered per Litter	8.07	6.77	5.84
Eggs Produced per Hen	254	205	176

*Based upon average number of farms having specified enterprises this period: crops 25, dairy 25, swine 23, poultry 20.

The pounds of milk produced per cow on institutional farms (Table 2) is considerably above the average of 7,868 for Central Pennsylvania Farms. In fact, milk production per cow for all state owned farms was as high as the

highest 10 percent of the privately operated farms in Central Pennsylvania. In egg production per hen, (Table 2), two-thirds of the state farms had a production equivalent to or higher than the upper 10 percent of the privately operated farms.

It would be a mistake to suggest that every institutional farm should have a crop index of 224, a production of 13,000 pounds of milk per cow, and 254 eggs per hen. The costs of obtaining such high yields may exceed the returns. All that it is probably safe to conclude from the data available is that these farms in the lower one-third should seriously consider making the changes required to improve their rates of production up to at least the current average for all institutional farms.

Feeding Efficiency

Table 3 shows the value of the product obtained per $100 expenditure for feed, which is an indication of the feeding and management efficiency on the institutional farms for the specified livestock. For example, those farms in the high group received milk valued at $271 for each $100 spent on feed while the farms in the low group only received $195 of milk on the same basis. The average value of milk produced per $100 feed for the commercial dairymen in the state belonging to the Dairy Herd Improvement Association was $229 in 1951 compared to an average of $226 for the institutional farms. This suggests that the dairy enterprises on the institutional farms are of comparable efficiency with the better commercial dairymen.

Table 3 - Comparison of Feeding Efficiency Among Institutional Farms (3 Year Average: June 1, 1949 - May 31, 1952).

Measures*	Division of Farms into Groups		
	High One Third	Middle One Third	Low One Third
Value of Milk Produced per $100 feed	$271	$243	$195
Value of eggs and meat produced per $100 feed	188	134	103
Value of pork produced per $100 feed	357	156	113

*Based upon average number of farms having specified enterprises this period: Dairy 25, Swine 25, Poultry 20.

The feeding efficiency of the poultry enterprises (Table 3) suggests that many farms incurred losses in this phase of their farming operations. A review of the financial statements for the fiscal years 1949-1950 and 1951-52 substantiates this conclusion. In the fiscal year ending May 31, 1950, approximately one-fourth of these farms incurred losses, while a larger number of the remaining farms made only negligible profits. In the year ending May 31, 1952 over 50 percent of the farms went in the red on this enterprise.

The feeding efficiency for two-thirds of the hog enterprises is quite high (Table 3). The ratio for the remaining one-third indicates that these farms may have incurred a loss when other costs than feed are taken into consideration. A review of the financial statements bears this out for the fiscal year ending May 31, 1952 which shows approximately 20 percent of the swine enterprises operated at a loss. However, both the feeding efficiency and financial statements indicate that swine is a somewhat more profitable enterprise than is poultry. This is probably due to the fact that swine utilize institutional garbage for part of their feed.

Cost Data

The term "total cost per unit of product" as used in Table 4 requires some clarification. It includes only cash expenses plus the value of home grown feeds. It does not include such items as depreciation on buildings and equipment, taxes and insurance, nor interest on investment. Labor costs, on the other hand, may be somewhat higher than on commercial farms because farm workers are governed by essentially the same regulations on working hours, vacations, and sick leave as other state employees. For these reasons the total costs of producing these commodities cannot be compared directly

with costs on commercial farms. These data do suggest, however, important differences in the cost of producing livestock products among institutional farms. For example, the most efficient dairy enterprises are producing milk for $4.40 per hundredweight or $2.80 a hundred less than the least efficient.

Table 4 - Comparison of Expense and Cost Data Among Institutional Farms (2 Year Average: May 31, 1950 - May 31, 1952).

Measures*	Division of Farms into Cost Groups		
	High One Third	Middle One Third	Low One Third
Total cost per 100 pounds of milk	$7.20	$5.61	$4.40
Feed cost per 100 pounds of milk	5.30	4.24	3.45
Total cost per pound of pork	34.60¢	24.3¢	15.40¢
Feed cost per pound of pork	27.50¢	19.3¢	10.60¢
Total cost per dozen eggs	$0.77¢	$0.51¢	$0.34¢
Feed cost per dozen eggs	0.48¢	0.31¢	0.21¢

*Average number of farms having specified enterprises this period: dairy cows, 25; hogs, 25; poultry, 20.

Feed costs represent approximately 70 percent of the total cost of producing milk and eggs on the institutional farms, and about 80 percent of the cost of producing pork. This percentage was about the same for each of the three cost groups. This indicates that the important variations in total cost among these farms are due largely to differences in the efficiency of utilizing feed. An inspection of the costs involved in producing one dozen eggs again verifies the unprofitability of this enterprise even though the costs shown in Table 4 are somewhat understated. This is due to the fact that it was necessary to subtract from the total costs and total feed costs the value of the poultry meat produced before calculating the cost per dozen eggs. This was necessary because it was not possible to separate the feed used to produce eggs from that used to produce poultry meat.

Role of Farm in Institution's Program

In visiting these farms it soon becomes apparent that there is a considerable diversity of opinion among institution superintendents concerning the rile of the farm in the over-all program of the institution. Extreme attitudes were exemplified by (1) superintendents who feel that the farm cannot be justified either on the basis of rehabilitation or subsistence and, (2) those who feel that the farms are justified on both scores. The latter group definitely was in the majority but there was a difference within this group in the degree or extent to which they felt the farm contributed to the economy of operations and to the rehabilitation of the patients or inmates. Intermediate opinions were expressed by those superintendents who felt that because the farm is needed to isolate the institution, the land should be farmed and, those who felt that the farm was a paying proposition but doubted its rehabilitation value.

One viewpoint of rehabilitation expressed by several of the superintendents appears to deserve serious consideration. It was that in Pennsylvania more attention should be given to rehabilitation designed to give the inmates and patients better training for working in industry. These superintendents were not criticising the value of the farm in the rehabilitation program, but were pointing to the need for a more balanced program in a state like Pennsylvania where industry is such an important part of the total economy.

The attitude of the superintendent concerning the role of the farm may influence farm operations. If he feels that the farm contributes neither to the economy of running the institution nor to the training and rehabilitation of patients or inmates, the farm manager may have difficulty in obtaining the

machinery, labor, or other facilities required to operate the farm efficiently. At the present time this factor does not appear to be critical in the operation of any of the farms. However, before making the very substantial investment required to establish a farm at a new institution, it would be desirable to make an evaluation of the contribution of the farm to rehabilitation and to providing imiation, by those who are qualified to reach a conclusion on the importance to be attached to these factors in establishing future institutions.

Variation in Management Ability of Farm Managers

As in any business, the degree of success depends to a considerable extent on the quality of management. The wide variations noted in the preceding section on the yields of crops and production per animal unit is, in part, a reflection of the differences in management ability of the farm manager. In terms of improving the general level of efficiency of the farm operations on certain institutional farms it is difficult to overestimate the importance of obtaining the services of outstanding farm managers. Most of these farms involve a volume of business far above that of the average commercial farm. This calls for corresponding increase in the organizational and management ability of the farm manager. With such a large volume of business there are great potentialities for making substantial savings with a relatively small improvement in efficiency. For example, if through better management the cost of producing milk on the eight high-cost herds could be reduced to the cost of production of the average institutional herd, the annual gain would be over $60,000. This problem of improving the less efficient management is a difficult one to accomplish quickly because of the tenure rights of individuals. Another difficulty is adjusting the salary of the farm managers in accordance with performance. While this factor is considered at the present time, it is doubtful that sufficient latitude exists in this respect.

The Department of Welfare is fully aware of the basic importance of management and it deserves commendation on two points. One is its program of apprenticeship training of young men who are interested in becoming farm managers. This is certainly sound and makes it possible to appraise as well as to train future managers. The other is the Department's "in-service" training program for present managers. Bringing these men together to discuss common problems and to learn the latest technical methods from agricultural specialists is undoubtedly one of the reasons for the generally good management on these farms at present.

Labor

Farm managers on the farms visited considered the problem of obtaining and keeping farm help one of their most serious problems. Two particular aspects of the problem of keeping farm labor were mentioned frequently. One was the tendency for the laborers to become dissatisfied with their cash wages after they learned what workers in industry were earning. Some of this is to be expected but, in part, it may be a reflection of the laborers' lack of appreciation for the perquisites supplied to them on institutional farms. Perhaps supplying the workers with facts on their true earnings would help with this particular aspect of the problem. The other point frequently mentioned was that farm laborers as a group received lower wages than ward attendants. Both from the standpoint of skills required and the power working conditions on the farm this seems to be a questionable practice. In addition to the economic considerations, it adds to the problem of labor relations by raising the question of relative status among the different groups of institutional workers.

Patients or inmate labor is depended upon as an important source of labor on institutional farms. There appears to be considerable variation, however, in the contribution that this type of help actually makes to the efficiency of the farm operations. This variation appears to be related closely to the importance attached to farm work as part of the treatment for patients, the responsibility of the attendants or guards for showing the patients or inmates how the work is to be done, and the attitude of the farm manager toward this type of help. No solution to this problem is suggested, since it clearly reaches beyond the farm side of the institution. It is of sufficient importance, however, to deserve frank and serious consideration by those groups in the institution who are involved in the problem.

Over Diversification and Small Enterprises

Institutional farms typically have a larger number of different crop and livestock enterprises than experience has proven to be desirable on commercial farms. Such diversification complicates the task of management and results in having some enterprises which are too small to utilize labor or machinery efficiently. For example, a poultry flock of a thousand layers is not adequate to justify hiring a trained poultryman and yet without a trained and experienced man in charge, production is likely to be low and costs high. Also, 100 acres of wheat may not justify a combine but it is too much to be handled properly by hiring the wheat harvested on a custom basis.

The principal reason for this diversification is that the major purpose of the farm is to provide food for use at the institution, which calls for variety in production instead of concentrating on what can be produced most

efficiently. In a few cases the existence of small inefficient enterprises can be traced to the personal interest of the farm manager or other administrative officers at the institution. This factor is not, however, of major importance in determining the selection of the principal farm enterprises.

The solution to this problem of overdiversification is not obvious. If the farm concentrated on the production of a few major products and sold what could not be utilized at the institution the proceeds would not benefit the institution directly but would instead be credited to the state treasury. Also, such a practice might invite the criticism of state farms competing in the open market with private commercial farms. Provided some change could be made in the accounting procedure, the other issue of competition might be handled if the problem were explained to the farm organization leaders in the state. Another solution suggested is for each institution to concentrate on a few products which it could produce most efficiently and then exchange the surplus production for surpluses from other institutions. Because of the bulk and perishibility of most of the products that would be exchanged this probably would not be economical or satisfactory to the institutions unless they were located close together and their farms were dissimilar so that the production was complementary.

Quality of Products Produced

Some criticism has been made of the quality of products brought from the farm to the institutions' kitchens. This applies primarily to vegetables and fruit rather than to such important products as milk, eggs, and meat where the quality appears to be uniformly high. It has been suggested that one reason certain products are not of top quality is that the farm is credited with the value delivered regardless of the grade. The importance

of this factor cannot be verified, but it does not seem logical in the case of many fruits and vegetables because the time when they should be harvested for maximum yield is also the time when they are of the highest quality. The exceptions are such crops as beets, carrots, and to a lesser degree, beans and peas. When these products are of low quality the reason is more likely to be due to poor weather which prevented the use of proper management practices and which results in sporadic rather than uniform production.

If these products were purchased in the open market in the quantity needed instead of being raised, the quality probably would not always be uniformly good except where the institution had ready access to large markets. It is recognized, furthermore, that while depending on home production may result in unavoidably poorer quality in some cases it also means that at times the quality is exceptionally high. Only a few canning operations were observed but in all cases the quality of the pack appeared good.

Purchasing Policies

Buying livestock feed and fertilizers on the basis of chemical analysis at competitive bidding has some limitations which should be recognized.

In the case of mixed feed, chemical analysis is not an entirely reliable measure of the quality of the feed since it does not measure palatability or indicate the quality of the ingredients that were used in the mix. There is also the problem of the effect on livestock production whenever it is necessary to change the feed being fed because a new manufacturer underbids the present supplier. To a considerable extent these problems are being met by the institution purchasing its ingredients and then doing its own mixing or buying mixed feeds on the basis of the institution's own formula. With fertilizers the chemical analysis is a better indication of its value as far

as the plant growth is concerned but it does not give much indication of whether or not it can be spread satisfactorily by machine and in some cases considerable difficulty has been experienced on this score.

Present policies with respect to purchasing farm machinery are probably more unsatisfactory than for feed and fertilizer. Following the principle of accepting the lowest bid has led to a wide variety of different makes and models of machinery on each farm. This has complicated unduly the task of keeping spare parts and providing satisfactory service and occasionally has led to costly breakdowns. It is not necessary to have all machinery from one manufacturer but these farms appeared to have an undue amount of variety which reduces efficiency.

Farm Records

Some limitations were observed in the type of data on farm operations available at the Harrisburg office. Generally the data on yields of crop, production of livestock, and net returns were good. The principal deficiency exists in the lack of any details regarding the breakdown of the various expenses that can be obtainable directly from the summaries in Harrisburg. Some importance of this limitation can be obtained by the fact that, in general, cash expenses were equivalent to about two-thirds of the gross income. Furthermore, efforts to explain the differences in the profitability of the farms suggests that an important part of the answer lies in the expense rather than in the receipts side of the budget. For example, variations in hired labor costs appears to be an important factor affecting profit since it accounts for about one-third of the total expenses. Data on this item, however, were not available in Harrisburg and less than half the institutions responded to a special request for such information in time for use in this study.

new institutions, however, it may be seriously questioned whether it would pay to make such large investments unless the farm serves other important objectives beyond the production of food. If these other considerations do warrant establishing a farm at future institutions it would appear desirable to concentrate on such enterprises as truck crops, potatoes, and dairying, including the production of good roughage, and thereby improve the efficiency of buildings, machinery, and labor.


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